Image Management

About Image Management

The Firepower 4100/9300 chassis uses two basic types of images:

Note All images are digitally signed and validated through Secure Boot. Don't modify the image in any way or you receive a validation error.

- Platform Bundle—The platform bundle is a collection of multiple independent images that operate on the Supervisor and security module/engine. The platform bundle includes the FXOS software package and the FXOS firmware package.
- Application—Application images are the software images you want to deploy on the security module/engine of the Firepower 4100/9300 chassis. Application images are delivered as Cisco Secure Package files (CSP) and are stored on the supervisor until deployed to a security module/engine as part of logical device creation or in preparation for later logical device creation. You can have multiple different versions of the same application image type stored on the Supervisor.

Note

- If you are upgrading both the Platform Bundle image and one or more Application images, you must upgrade the Platform Bundle first.
- If you're installing an ASA application in the device, you can delete the images of the existing application threat defense and vice versa. When you try to delete all the threat defense images, at least one image deletion will be denied with an error message `Invalid operation as no default threat defense/ASA APP will be left. Please select a new default threat defense app`. In order to delete all the threat defense images, you must leave the default image alone and delete the rest of the images and then finally delete the default image.
- If you are upgrading the Platform Bundle image and the current firmware version running on the Supervisor is lower than the firmware package version bundled in the platform bundle, there will be two reboots during the upgrade process. One is for upgrading FXOS, and the other is for upgrading the firmware.

Downloading Images from Cisco.com

Download FXOS and application images from Cisco.com so you can upload them to the chassis.

Before you begin

You must have a Cisco.com account.

Procedure

Step 1 Using a web browser, navigate to http://www.cisco.com/go/firepower9300-software or http://www.cisco.com/go/firepower4100-software.
The software download page for the Firepower 4100/9300 chassis is opened in the browser.

Step 2 Find and then download the appropriate software image to your local computer.

Uploading an Image to the Security Appliance

You can upload FXOS and application images to the chassis.

Before you begin

Make sure the image you want to upload is available on your local computer.

Procedure

Step 1 Choose **System** > **Updates**.
The Available Updates page shows a list of the FXOS platform bundle images and application images that are available on the chassis.

Step 2 Click **Upload Image** to open the Upload Image dialog box.

Step 3 Click **Choose File** to navigate to and select the image that you want to upload.

Step 4 Click **Upload**.
The selected image is uploaded to the Firepower 4100/9300 chassis. While the image is uploading, the system displays a progress bar to indicate the percentage of the upload that has been completed.

Step 5 For certain software images you will be presented with an end-user license agreement after uploading the image. Follow the system prompts to accept the end-user license agreement.

Verifying the Integrity of an Image

The integrity of the image is automatically verified when a new image is added to the Firepower 4100/9300 chassis. If needed, you can use the following procedure to manually verify the integrity of an image.

Procedure

Step 1 Choose **System** > **Updates**.
The Available Updates page shows a list of the FXOS platform bundle images and application images that are available on the chassis.

Step 2 Click **Verify** (check mark icon) for the image you want to verify.

The system will verify the integrity of the image and display the staus in the Image Integrity field.

Upgrading the FXOS Platform Bundle

Before you begin

Download the platform bundle software image from Cisco.com (see Downloading Images from Cisco.com, on page 2) and then upload that image to the Firepower 4100/9300 chassis (see Uploading an Image to the Security Appliance, on page 2).

Note The upgrade process typically takes between 20 and 30 minutes.

If you are upgrading a Firepower 9300 or 4100 Series security appliance that is running a standalone logical device or if you are upgrading a Firepower 9300 security appliance that is running an intra-chassis cluster, traffic will not traverse through the device while it is upgrading.

If you are upgrading Firepower 9300 or 4100 Series security appliance that is part of an inter-chassis cluster, traffic will not traverse through the device being upgraded while it is upgrading. However, the other devices in the cluster will continue to pass traffic.

Procedure

Step 1 Choose **System** > **Updates**.
The Available Updates page shows a list of the FXOS platform bundle images and application images that are available on the chassis.

Step 2 Click **Upgrade** for the FXOS platform bundle to which you want to upgrade.

The system will first verify the software package that you want to install. It will inform you of any incompatibility between currently installed applications and the specified FXOS platform software package. It will also warn you that any existing sessions will be terminated and that the system will need to be rebooted as part of the upgrade.

Step 3 Click **Yes** to confirm that you want to proceed with installation, or click **No** to cancel the installation.

The FXOS unpacks the bundle and upgrades/reloads the components.

Downloading a Logical Device Software Image to the Firepower 4100/9300 chassis

You can use FTP, HTTP/HTTPS, SCP, SFTP, or TFTP to copy the logical device software image to the Firepower 4100/9300 chassis.

Before you begin

Collect the following information that you will need to import a configuration file:

- IP address and authentication credentials for the server from which you are copying the image
- Fully qualified name of the software image file

Note FXOS 2.8.1 and later versions support HTTP/HTTPS protocols for firmware and application image downloads.

Procedure

Step 1 Enter Security Services mode:

Firepower-chassis # **scope ssa**

Step 2 Enter Application Software mode:

Firepower-chassis /ssa # **scope app-software**

Step 3 Download the logical device software image:

Firepower-chassis /ssa/app-software # **download image** *URL*

Specify the URL for the file being imported using one of the following syntax:

- **ftp**://*username@hostname/path*
- **http**://*username@hostname/path*
- **https**://*username@hostname/path*
- **scp**://*username@hostname/path*
- **sftp**://*username@hostname/path*
- **tftp**://*hostname*:*port-num*/*path*

Note Do not use tftpdnld to install the image as it throws error.

Step 4 To monitor the download process:

Firepower-chassis /ssa/app-software # **show download-task**

Step 5 To view the downloaded applications:

Firepower-chassis /ssa/app-software # **up**

Firepower-chassis /ssa # **show app**

Step 6 To view details for a specific application:

Firepower-chassis /ssa # **scope app** *application_type image_version*

Firepower-chassis /ssa/app # **show expand**

Example

The following example copies an image using the SCP protocol:

```
Firepower-chassis # scope ssa
Firepower-chassis /ssa # scope app-software
Firepower-chassis /ssa/app-software # download image
scp://user@192.168.1.1/images/cisco-asa.9.4.1.65.csp
Firepower-chassis /ssa/app-software # show download-task

Downloads for Application Software:
    File Name                     Protocol   Server               Userid          State
    ----------------------------- ---------- -------------------- --------------- -----
    cisco-asa.9.4.1.65.csp        Scp        192.168.1.1          user            Downloaded

Firepower-chassis /ssa/app-software # up

Firepower-chassis /ssa # show app

Application:
    Name       Version    Description Author     Deploy Type CSP Type    Is Default App
    ---------- ---------- ----------- ---------- ----------- ----------- --------------
    asa        9.4.1.41   N/A                    Native      Application No
    asa        9.4.1.65   N/A                    Native      Application Yes

Firepower-chassis /ssa # scope app asa 9.4.1.65
```

```
Firepower-chassis /ssa/app # show expand

Application:
    Name: asa
    Version: 9.4.1.65
    Description: N/A
    Author:
    Deploy Type: Native
    CSP Type: Application
    Is Default App: Yes

    App Attribute Key for the Application:
        App Attribute Key Description
        ----------------- -----------
        cluster-role      This is the role of the blade in the cluster
        mgmt-ip           This is the IP for the management interface
        mgmt-url          This is the management URL for this application

    Net Mgmt Bootstrap Key for the Application:
        Bootstrap Key Key Data Type Is the Key Secret Description
        ------------- ------------- ----------------- -----------
        PASSWORD      String        Yes               The admin user password.

    Port Requirement for the Application:
        Port Type: Data
        Max Ports: 120
        Min Ports: 1

        Port Type: Mgmt
        Max Ports: 1
        Min Ports: 1

        Mgmt Port Sub Type for the Application:
            Management Sub Type
            -------------------
            Default

        Port Type: Cluster
        Max Ports: 1
        Min Ports: 0
Firepower-chassis /ssa/app #
```

Updating the Image Version for a Logical Device

Use this procedure to upgrade the ASA application image to a new version, or set the threat defense application image to a new startup version that will be used in a disaster recovery scenario.

When you change the startup version on a threat defense logical device using chassis manager or the FXOS CLI, the application does not immediately upgrade to the new version. The logical device startup version is the version that threat defense reinstalls to in a disaster recovery scenario. After initial creation of a threat defense logical device, you do not upgrade the threat defense logical device using chassis manager or the FXOS CLI. To upgrade a threat defense logical device, you must use management center. See the System Release Notes for more information: http://www.cisco.com/c/en/us/support/security/defense-center/products-release-notes-list.html.

Also, note that any updates to the threat defense logical device will not be reflected on the **Logical Devices** > **Edit** and **System** > **Updates** pages in chassis manager. On these pages, the version shown indicates the software version (CSP image) that was used to create the threat defense logical device.

Note When you set the startup version for threat defense, startup version of the application gets updated. Hence, you must manually reinstall the application or reinitialize the blade to apply the selected version. This procedure is not the equivalent of upgrading or downgrading the threat defense software, rather a complete reinstallation (reimage). Therefore, the application gets deleted and the existing configuration gets lost.

When you change the startup version on an ASA logical device, the ASA upgrades to that version and all configuration is restored. Use the following workflows to change the ASA startup version, depending on your configuration:

Note When you set the startup version for ASA, the application gets automatically restarted. This procedure is the equivalent of upgrading or downgrading the ASA software (existing configuration gets preserved).

ASA High Availability -

1. Change the logical device image version(s) on the standby unit.
2. Make the standby unit active.
3. Change the application version(s) on the other unit.

ASA Inter-Chassis Cluster -

1. Change the startup version on the data unit.
2. Make the data unit the control unit.
3. Change the startup version on the original control unit (now data).

Before you begin

Download the application image you want to use for the logical device from Cisco.com (see Downloading Images from Cisco.com, on page 2) and then upload that image to the Firepower 4100/9300 chassis (see Uploading an Image to the Security Appliance, on page 2).

If you are upgrading both the Platform Bundle image and one or more Application images, you must upgrade the Platform Bundle first.

Procedure

Step 1 Choose **Logical Devices** to open the Logical Devices page.
The Logical Devices page shows a list of configured logical devices on the chassis. If no logical devices have been configured, a message stating so is shown instead.

Step 2 Click **Update Version** for the logical device that you want to update to open the **Update Image Version** dialog box.

Step 3 For the **New Version**, choose the software version.

Step 4 Click **OK**.

Firmware Upgrade

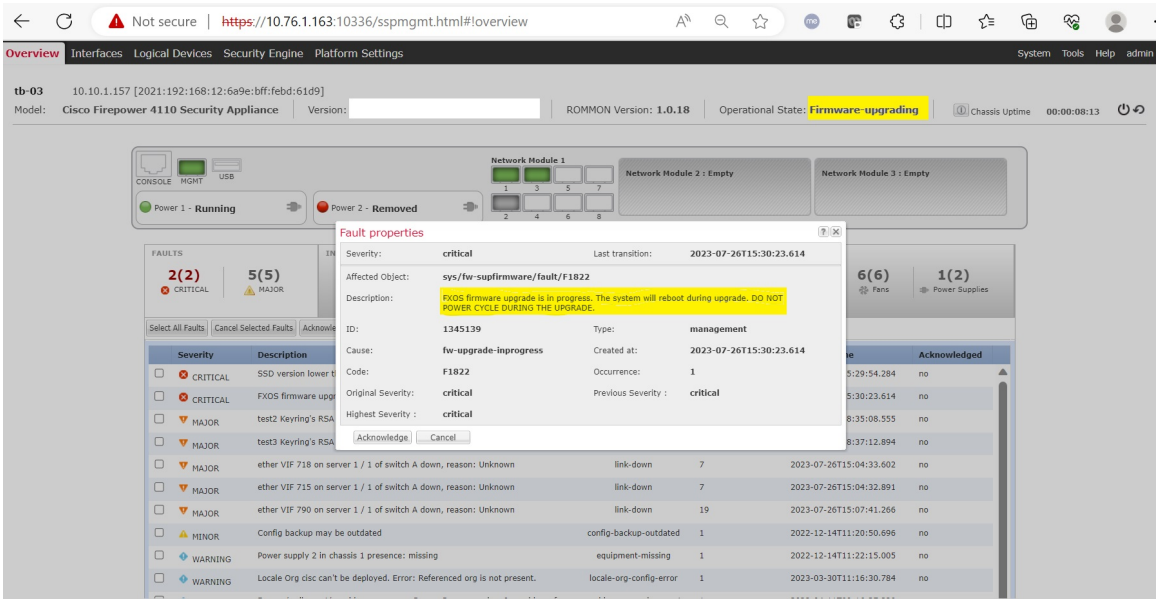
The firmware upgrade process is used to upgrade the ROMMON, FPGA, and SSD firmware on the Firepower 4100/9300 chassis Supervisor and to upgrade the FPGA on installed network modules. The firmware package is included in the FXOS platform bundle, and will be used for firmware auto-upgrade.

For example, the FXOS image fxos-k9.fxos_version.SPA contains the following firmware images:

- fxos-k9-fpr9k-firmware.1.0.19.SPA
- fxos-k9-fpr4k-firmware.1.0.19.SPA

During the FXOS upgrade process, the firmware package is unpacked based on the platform, and the system checks for a firmware upgrade. If the ROMMON, FPGA, and/or SSD are running a firmware version lower than the one included in the FXOS platform bundle, depending on the platform, the unpacked firmware package will be used for firmware auto-upgrade.

Whenever the firmware upgrade is auto-triggered, the **Operational State** under overview page will be updated to **Firmware-upgrading**. Also a critical fault message will be displayed on the status bar stating that `FXOS firmware upgrade is in progress. The system will reboot during upgrade. DO NOT POWER CYCLE DURING THE UPGRADE.`



The **Operational State** will change to **Operable** once the firmware upgrade is completed.

For information on the supported firmware packages and supported platforms, see the *Cisco Firepower 4100/9300 FXOS Firmware Upgrade Guide*.